

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-5 (canceled)

Claim 6 (Canceled)

Claims 7 and 8 (canceled)

9. (withdrawn) A liquid crystal display apparatus , having a pair of substrates of which at least one substrate is transparent and a liquid crystal layer sandwiched between the substrates, comprising:

a plurality of scanning electrodes formed on one of the substrates; and

a plurality of signal electrodes intersecting in a matrix form with said plurality of scanning electrodes;

wherein the display apparatus further comprises, within each of the regions surrounded by said plurality of scanning electrodes and said plurality of signal electrodes:

(a) a display data holding circuit connected to a corresponding scanning electrode and signal electrode, for fetching and storing display data from a signal electrode in response to a scanning signal for holding a display image without updating the display data while a power supply to the display apparatus is maintained, the display data holding circuit having one of a coplanar and an inverse stagger structure;

(b) a switching device connected to said display data holding circuit and having a switching operation thereof controlled by the display data holding circuit; and

(c) a display electrode connected to said switching device;

wherein said display data holding circuit includes a thin film transistor which has a gate connected to the corresponding scanning electrode and one of a drain and a source connected to corresponding signal electrode, and a static memory circuit connected to the other of the drain and the source of said thin film transistor, the static memory circuit including a plurality of thin film transistors.

Claims 10-22 (canceled).

23. (withdrawn) A liquid crystal display apparatus , having a pair of substrates of which at least one substrate is transparent and a liquid crystal layer sandwiched between the substrates, comprising:

a plurality of scanning electrodes formed on one of the substrates; and

a plurality of signal electrodes intersecting in a matrix form with said plurality of scanning electrodes;

wherein the display apparatus further comprises, within each of the regions surrounded by said plurality of scanning electrodes and said plurality of signal electrodes:

(a) a display data holding circuit connected to a corresponding scanning electrode and signal electrode, for fetching and storing display data from a signal electrode in response to a scanning signal for holding a display image without updating the display data while a power supply to the display apparatus is maintained, the display data holding circuit having one of a coplanar and an inverse stagger structure;

(b) a switching device connected to said display data holding circuit and having a switching operation thereof controlled by the display data holding circuit; and

(c) a display electrode connected to said switching device;

wherein said display electrode is an opaque reflection electrode arranged in overlapping relationship with at least one of said scanning electrode, said signal

electrode and a thin film transistor for enabling driving of the liquid crystal display apparatus in a reflection type display mode.

24. (withdrawn) A liquid crystal display apparatus according to claim 23, wherein said liquid crystal layer is a guest-host type liquid crystal.

Claims 25 and 26 (canceled)

Claims 27-29 (Canceled)

30. (Currently Amended) A liquid crystal display apparatus according to claim 6 having a pair of substrates of which at least one substrate is transparent and a liquid crystal layer sandwiched between the substrates, comprising:

a plurality of scanning electrodes formed on one of the substrates; and

a plurality of signal electrodes intersecting in a matrix form with said plurality of scanning electrodes;

wherein the display apparatus further comprises, within each of the regions surrounded by said plurality of scanning electrodes and said plurality of signal electrodes:

(a) a display data holding circuit connected to a corresponding scanning electrode and signal electrode, for fetching and storing display data from a signal electrode in response to a scanning signal for holding a display image without updating the display data while a power supply to the display apparatus is maintained, the display data holding circuit having one of a coplanar and an inverse stagger structure;

(b) a switching device connected to said display data holding circuit and having a switching operation thereof controlled by the display data holding circuit;
and

(c) a display electrode connected to said switching device;

wherein said display data holding circuit includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode, and a capacitor at least partially formed by a portion of one of the drain and the source of said thin film transistor, wherein the drain of said thin film transistor of said display data holding circuit is connected to the corresponding signal electrode, and the capacitor is at least partially formed by a portion of the drain of said thin film transistor.

31. (Previously Presented) A liquid crystal display apparatus according to claim 30, wherein one electrode of the capacitor is formed of a same material as a material of the drain of said thin film transistor.

32. (Withdrawn) A liquid crystal display apparatus according to claim 6, wherein the source of said thin film transistor of the display data holding circuit is connected to the corresponding signal electrode.

33. (Withdrawn) A liquid crystal display apparatus according to claim 6, wherein the capacitor of said display data holding circuit is at least partially formed by a portion of the source of said thin film transistor.

34. (Withdrawn) A liquid crystal display apparatus according to claim 6, wherein the source of said thin film transistor of said display data holding circuit is connected to the corresponding signal electrode, and the capacitor is at least partially formed by a portion of the source of said thin film transistor.

35. (Withdrawn) A liquid crystal display apparatus according to claim 34, wherein one electrode of the capacitor is formed of a same material as a material of the source of said thin film transistor.

36. (Currently Amended) A liquid crystal display apparatus ~~according to claim 27~~ having a pair of substrates of which at least one substrate is transparent and a liquid crystal layer sandwiched between the substrates, comprising:

a plurality of scanning electrodes formed on one of the substrates; and
a plurality of signal electrodes intersecting in a matrix form with said plurality of scanning electrodes;

wherein the display apparatus further comprises, within each of the regions surrounded by said plurality of scanning electrodes and said plurality of signal electrodes:

(a) a display data holding circuit connected to a corresponding scanning electrode and signal electrode, for fetching and storing display data from a signal electrode in response to a scanning signal for holding a display image without updating the display data while a power supply to the display apparatus is maintained, the display data holding circuit having one of a coplanar and an inverse stagger structure;

(b) a switching device connected to said display data holding circuit and having a switching operation thereof controlled by the display data holding circuit;
and

(c) a display electrode connected to said switching device;
wherein said display data holding circuit includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode, and a capacitor at least partially formed by a portion of one of the drain and the source of said thin film transistor,

wherein the one electrode of the capacitor is formed of a same material as a material of the drain of said thin film transistor.

37. (Previously Presented) A liquid crystal display apparatus according to claim 27, wherein the one electrode of the capacitor is formed of a same material as a material of the source of said thin film transistor.

Claims 38 and 39 (Canceled).

40. (Currently Amended) A liquid crystal display apparatus according to claim 39 having a pair of substrates of which at least one substrate is transparent and a liquid crystal layer sandwiched between the substrates, comprising:

a plurality of scanning electrodes formed on one of the substrates; and
a plurality of signal electrodes intersecting in a matrix form with said plurality of scanning electrodes;

wherein the display apparatus further comprises, within each of the regions surrounded by said plurality of scanning electrodes and said plurality of signal electrodes:

(A) a display data holding circuit connected to a corresponding scanning electrode and signal electrode, for fetching and storing display data from a signal electrode in response to a scanning signal for holding a display image without updating the display data while a power supply to the display apparatus is maintained, the display data holding circuit having one of a coplanar and an inverse stagger structure;

(B) a switching device connected to said display data holding circuit and having a switching operation thereof controlled by the display data holding circuit;
and

(C) a display electrode connected to said switching device;
wherein at least one of (a) said display data holding circuit includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode, and at least one (i) of a capacitor at least partially formed by a portion of one of the drain and the source of said thin film transistor, and (ii) a static memory circuit connected to the other of the drain and the source of said thin film transistor, the static memory circuit including a plurality of thin film transistors, and (b) said display electrode is an opaque reflection electrode arranged in overlapping relation with at least one of said scanning electrode, said signal electrode, and a thin film transistor for enabling driving of the liquid crystal display apparatus in a reflection type display mode,
wherein said display data holding circuit which includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode is provided, and a capacitor is provided which is at least partially formed by a portion of one of the drain and the source of said thin film transistor, wherein the drain of said thin film transistor of said display data holding circuit is connected to the corresponding signal electrode.

41. (Currently Amended) A liquid crystal display apparatus according to claim 39 having a pair of substrates of which at least one substrate is transparent and a liquid crystal layer sandwiched between the substrates, comprising:
a plurality of scanning electrodes formed on one of the substrates; and
a plurality of signal electrodes intersecting in a matrix form with said plurality of scanning electrodes;

wherein the display apparatus further comprises, within each of the regions surrounded by said plurality of scanning electrodes and said plurality of signal electrodes:

(A) a display data holding circuit connected to a corresponding scanning electrode and signal electrode, for fetching and storing display data from a signal electrode in response to a scanning signal for holding a display image without updating the display data while a power supply to the display apparatus is maintained, the display data holding circuit having one of a coplanar and an inverse stagger structure;

(B) a switching device connected to said display data holding circuit and having a switching operation thereof controlled by the display data holding circuit; and

(C) a display electrode connected to said switching device;
wherein at least one of (a) said display data holding circuit includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode, and at least one (i) of a capacitor at least partially formed by a portion of one of the drain and the source of said thin film transistor, and (ii) a static memory circuit connected to the other of the drain and the source of said thin film transistor, the static memory circuit including a plurality of thin film transistors, and (b) said display electrode is an opaque reflection electrode arranged in overlapping relation with at least one of said scanning electrode, said signal electrode, and a thin film transistor for enabling driving of the liquid crystal display apparatus in a reflection type display mode,

wherein said display data holding circuit which includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode is provided, and a capacitor is provided which is at least partially formed by a portion of one of the drain

and the source of said thin film transistor, wherein the capacitor of said display data holding circuit is at least partially formed by a portion of the drain of said thin film transistor.

42. (Currently Amended) A liquid crystal display apparatus according to claim 39 having a pair of substrates of which at least one substrate is transparent and a liquid crystal layer sandwiched between the substrates, comprising:

a plurality of scanning electrodes formed on one of the substrates; and

a plurality of signal electrodes intersecting in a matrix form with said plurality of scanning electrodes;

wherein the display apparatus further comprises, within each of the regions surrounded by said plurality of scanning electrodes and said plurality of signal electrodes:

(A) a display data holding circuit connected to a corresponding scanning electrode and signal electrode, for fetching and storing display data from a signal electrode in response to a scanning signal for holding a display image without updating the display data while a power supply to the display apparatus is maintained, the display data holding circuit having one of a coplanar and an inverse stagger structure;

(B) a switching device connected to said display data holding circuit and having a switching operation thereof controlled by the display data holding circuit;
and

(C) a display electrode connected to said switching device;
wherein at least one of (a) said display data holding circuit includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode, and at least one (i) of a capacitor at least partially formed by a portion of one of the drain and the source of said thin film transistor, and (ii) a static memory circuit connected to the

other of the drain and the source of said thin film transistor, the static memory circuit including a plurality of thin film transistors, and (b) said display electrode is an opaque reflection electrode arranged in overlapping relation with at least one of said scanning electrode, said signal electrode, and a thin film transistor for enabling driving of the liquid crystal display apparatus in a reflection type display mode,

wherein said display data holding circuit which includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode is provided, and a capacitor is provided which is at least partially formed by a portion of one of the drain and the source of said thin film transistor, wherein the drain of said thin film transistor of said display data holding circuit is connected to the corresponding signal electrode, and the capacitor is at least partially formed by a portion of the drain of said thin film transistor.

43. (Currently Amended) A liquid crystal display apparatus ~~according to claim 39~~ having a pair of substrates of which at least one substrate is transparent and a liquid crystal layer sandwiched between the substrates, comprising:

a plurality of scanning electrodes formed on one of the substrates; and
a plurality of signal electrodes intersecting in a matrix form with said plurality of scanning electrodes;

wherein the display apparatus further comprises, within each of the regions surrounded by said plurality of scanning electrodes and said plurality of signal electrodes:

(A) a display data holding circuit connected to a corresponding scanning electrode and signal electrode, for fetching and storing display data from a signal electrode in response to a scanning signal for holding a display image without

updating the display data while a power supply to the display apparatus is maintained, the display data holding circuit having one of a coplanar and an inverse stagger structure;

(B) a switching device connected to said display data holding circuit and having a switching operation thereof controlled by the display data holding circuit;
and

(C) a display electrode connected to said switching device;
wherein at least one of (a) said display data holding circuit includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode, and at least one (i) of a capacitor at least partially formed by a portion of one of the drain and the source of said thin film transistor, and (ii) a static memory circuit connected to the other of the drain and the source of said thin film transistor, the static memory circuit including a plurality of thin film transistors, and (b) said display electrode is an opaque reflection electrode arranged in overlapping relation with at least one of said scanning electrode, said signal electrode, and a thin film transistor for enabling driving of the liquid crystal display apparatus in a reflection type display mode,

_____ wherein said display data holding circuit which includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode is provided, and a capacitor is provided which is at least partially formed by a portion of one of the drain and the source of said thin film transistor, wherein one electrode of the capacitor is formed of a same material as a material of the drain of said thin film transistor.

44. (Currently Amended) A liquid crystal display apparatus according to claim 39 having a pair of substrates of which at least one substrate is transparent and a liquid crystal layer sandwiched between the substrates, comprising:

a plurality of scanning electrodes formed on one of the substrates; and

a plurality of signal electrodes intersecting in a matrix form with said plurality of scanning electrodes;

wherein the display apparatus further comprises, within each of the regions surrounded by said plurality of scanning electrodes and said plurality of signal electrodes:

(A) a display data holding circuit connected to a corresponding scanning electrode and signal electrode, for fetching and storing display data from a signal electrode in response to a scanning signal for holding a display image without updating the display data while a power supply to the display apparatus is maintained, the display data holding circuit having one of a coplanar and an inverse stagger structure;

(B) a switching device connected to said display data holding circuit and having a switching operation thereof controlled by the display data holding circuit;
and

(C) a display electrode connected to said switching device;
wherein at least one of (a) said display data holding circuit includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode, and at least one (i) of a capacitor at least partially formed by a portion of one of the drain and the source of said thin film transistor, and (ii) a static memory circuit connected to the other of the drain and the source of said thin film transistor, the static memory circuit including a plurality of thin film transistors, and (b) said display electrode is an opaque reflection electrode arranged in overlapping relation with at least one of said

scanning electrode, said signal electrode, and a thin film transistor for enabling driving of the liquid crystal display apparatus in a reflection type display mode,

wherein said display data holding circuit which includes a thin film transistor having a gate connected to the corresponding scanning electrode and one of a drain and a source connected to the corresponding signal electrode is provided, and a capacitor is provided which is at least partially formed by a portion of one of the drain and the source of said thin film transistor, wherein one electrode of the capacitor is formed of a same material as a material of one of the drain and the source of said thin film transistor.

45. (Previously Presented) A liquid crystal display apparatus according to claim 44, wherein the one electrode of the capacitor is formed of a same material as a material of the drain of said thin film transistor.